What is claimed is:

1. A radiological imaging apparatus comprising:

an image pickup device that is provided with a plurality of radiation detectors for detecting the radiation from a subject, wherein the radiation passing through one of said radiation detectors is to be detected by another one of said radiation detectors; and

signal processors that are each connected to corresponding one of said radiation detectors to process a radiation detection signal detected by said corresponding one on said radiation detectors.

2. The radiological imaging apparatus according to claim 1, wherein said image pickup device is provided with an X-ray source for irradiating said subject with X-rays and a flat panel detector equipped with said plurality of radiation detectors.

3. The radiological imaging apparatus according to claim 1, further comprising a bed on which said subject is to be placed.

4. The radiological imaging apparatus according to claim 1, wherein said one of said radiation detectors and said another one of said radiation detectors are each mounted on a radiation detector support member.

5. The radiological imaging apparatus according to claim 1, wherein said image pickup device includes an X-ray source that moves around said subject to irradiate said subject with X-rays.

6. The radiological imaging apparatus according to claim 1, wherein said radiation detectors detect γ-rays that are emitted from said subject due to a radiopharmaceutical administered to said subject.

7. The radiological imaging apparatus according to claim 6, wherein said image pickup device includes an X-ray source that moves around said subject to irradiate said subject with X-rays, and said radiation detectors also detect X-rays that pass through said subject after being emitted from said X-ray source.

8. The radiological imaging apparatus according to claim 3, wherein said one of said radiation detectors and said another one of said radiation detectors are linearly arranged.

9. A radiological imaging apparatus comprising:

a bed on which a medical examinee is to be laid;

an image pickup device that includes a plurality of radiation detectors for detecting the radiation from said medical examinee, said radiation detectors being disposed in said image pickup device, arranged around the circumference of a through-hole into which said bed is to

be inserted, and mounted at different positions in the radial direction of said through-hole; and

signal processors that are each connected to corresponding one of said radiation detectors to process a radiation detection signal detected by said corresponding one of said radiation detectors.

10. The radiological imaging apparatus according to claim 9, wherein said radiation detectors are mounted on radiation detector support members that are positioned around the circumference of said through-hole.

11. The radiological imaging apparatus according to claim 9, wherein said plurality of radiation detectors mounted at different positions in the radial direction of said through-hole are arranged linearly in said radial direction.

12. The radiological imaging apparatus according to claim 9, further comprising a tomogram generator for receiving information output from said signal processors and creating tomogram data about said subject in accordance with the received output information.

13. The radiological imaging apparatus according to claim 12, wherein said information output from said signal processors is obtained when γ-ray detection signals, which are said radiation detection signals, are processed by said signal processors.

14. The radiological imaging apparatus according to claim 9, wherein said image pickup device includes a γ-ray source that moves around said subject to irradiate said subject with γ-rays, and said radiation detectors detect a first γ-ray that passes through said subject after being emitted from said γ-ray source as well as a second γ-ray that is emitted from said subject due to a radiopharmaceutical administered to said subject.

15. The radiological imaging apparatus according to claim 14, further comprising a tomogram data generator;

wherein said signal processors output first information upon receipt of first γ-ray detection signals that are output from said radiation detectors upon detection of said first γ-ray and output second information upon receipt of second γ-ray detection signals that are output from said radiation detectors upon detection of said second γ-ray; and

wherein said tomogram data generator corrects said second information in accordance with said first information and creates tomogram data about said subject from said corrected second information.

16. The radiological imaging apparatus according to claim 9, wherein said image pickup device includes an X-ray source that moves around said subject to irradiate

said subject with X-rays, wherein said plurality of radiation detectors form multiple layers of radiation detectors in said radial direction, and wherein said radiation detectors included at least in the first layer from said through-hole output a first detection signal, which is the detection signal for one of said rays, that is, said X-ray passing through said subject as well as a second detection signal, which is the detection signal for another one of said rays, that is, a γ-ray emitted from said subject.

17. The radiological imaging apparatus according to claim 16, further comprising a tomogram data generator for creating first tomogram data about said subject in accordance with first information that is output from said signal processors upon input of said first detection signal, creating second tomogram data about said subject in accordance with second information that is output from said signal processors upon input of said second detection signal, and creating synthesized tomogram data by synthesizing said first tomogram data and said second tomogram data.

18. The radiological imaging apparatus according to claim 16, comprising a tomogram data generator;

wherein said signal processors connected to said radiation detectors in some radiation detector layers,

positioned on said through-hole side, of said multiple radiation detector layers include X-ray signal processors for outputting first information about X-rays in accordance with said first detection signal and γ-ray signal processors for outputting second information about γ-rays in accordance with said second detection signal, and said signal processors connected to said radiation detectors in the remaining radiation detector layers of the multiple radiation detector layers do not include said X-ray signal processors but include said γ-ray signal processors; and

wherein said tomogram data generator creates first tomogram data about said subject in accordance with said first information that is output from said X-ray signal processors, creates second tomogram data about said subject in accordance with said second information that is output from said γ-ray signal processors, and creates synthesized tomogram data by synthesizing said first tomogram data and said second tomogram data.

19. The radiological imaging apparatus according to claim 9, further comprising a radiation detector deterioration check device;

wherein said plurality of radiation detectors are arranged in said direction of the radius to form multiple radiation detector layers, wherein said signal processors

connected to said radiation detectors output first information upon input of a γ-ray detection signal, which is said radiation detection signal; and

wherein said radiation detector deterioration check device determines the measured detection efficiency proportion of radiation detectors in said multiple layers in accordance with said first information about the radiation detectors and uses the resultant measured value proportion and theoretical detection efficiency proportion of the radiation detectors to determine whether the radiation detectors are deteriorated.

20. The radiological imaging apparatus according to claim 9, wherein said radiation detectors are semiconductor radiation detectors.

21. The radiological imaging apparatus according to claim 1, further comprising a counter;

wherein said counter uses the γ-ray detection signals output from three or more of said plurality of radiation detectors within a preselected period of time and the positional information about said three or more radiation detectors that have output the γ-ray detection signals, so as to determine which of said three or more radiation detectors have detected unscattered γ-rays in said radiation detectors.

22. A radiological imaging apparatus comprising:

a plurality of radiation detectors for detecting γ-rays; and

a counter that uses the γ-ray detection signals output from three or more of said plurality of radiation detectors within a preselected period of time and the positional information about said three or more radiation detectors that have output the γ-ray detection signals, so as to determine which of said three or more radiation detectors have detected unscattered γ-rays in said radiation detectors.

23. A radiological imaging apparatus comprising:

a plurality of radiation detectors for detecting γ-rays emitted from a subject to which a radiopharmaceutical is administered; and

a counter that, when γ-ray detection signals are output from three or more of said plurality of radiation detectors within a preselected period of time, uses the positional information about at least two of said radiation detectors, the energy detection values of at least two of said radiation detectors, and the positional information about radiation detectors that have detected one of a pair of said γ-rays, so as to determine the attenuation sequence, initial incidence position, and initial incidence direction of the remaining one of said pair of γ-rays.

24. The radiological imaging apparatus according to claim 23, wherein said attenuation sequence, said initial incidence position, and said initial incidence direction are determined by checking two or more different attenuation sequences of one of said γ-rays, which can be estimated from the positional information about radiation detectors that have detected one of said γ-rays and radiation detectors that have detected the other one of said γ-rays, and selecting a sequence exhibiting a proper relationship between the scatter angle and energy detection value of one of said γ-rays.

25. A radiological imaging apparatus comprising:

a plurality of radiation detectors for detecting γ-rays;

collimators positioned in front of said plurality of radiation detectors to permit γ-ray passage; and

a counter that, when detection signals are output from three or more of said plurality of radiation detectors within a preselected period of time, uses the positional information about three or more of said radiation detectors and the energy detection values of three or more of said radiation detectors in order to determine the attenuation sequence, initial incidence position, and initial incidence direction of said γ-rays.

26. The radiological imaging apparatus according to claim 25, wherein said attenuation sequence, said initial incidence position and said initial incidence direction are determined by checking two or more different attenuation sequences of said γ-rays, which can be estimated from said positional information, and selecting a sequence exhibiting a proper relationship to said energy detection value.

27. The radiological imaging apparatus according to claim 26, wherein the initial incidence position of said γ-rays is determined in accordance with said selected proper attenuation sequence, and then the determined initial incidence position and said energy detection value are used to determine the initial incidence direction of said γ-rays.

28. The radiological imaging apparatus according to claim 22, wherein said plurality of radiation detectors are arranged in the form of a ring while a number of said plurality of radiation detectors are arrayed in the axial direction and in multiple layers in the radial direction.

29. The radiological imaging apparatus according to claim 28, further comprising a γ-ray discriminator that outputs a pulse signal upon receipt of a γ-ray detection signal input from said radiation detector.

30. The radiological imaging apparatus according to claim 29, wherein said counter outputs the positional information about said determined radiation detector and the count information about said pulse signal.

31. The radiological imaging apparatus according to claim 30, further comprising a tomogram generator for generating tomogram data in accordance with the positional information about said radiation detectors and said count information and a display device for displaying said tomogram data.

32. The radiological imaging apparatus according to claim 22, further comprising a tomogram generator for generating tomogram data in accordance with the positional information about said determined radiation detector and the γ-ray detection signal output from said determined radiation detector.

33. The radiological imaging apparatus according to claim 28, further comprising an X-ray source for emitting X-rays.

34. The radiological imaging apparatus according to claim 33, further comprising a signal discriminator for discriminating the detection signals for γ-rays and X-rays that are detected by a plurality of shared radiation detectors, which are among said multiple-layered

radiation detectors, mounted in at least the innermost area, and used for detecting γ-rays and X-rays.